



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of )  
Kevin M. McHugh )  
Serial No.: 09/592,003 )      Examiner: Leyson  
Filed: 06/12/00      )      Group Art Unit: 1722  
Atty. Dkt.: EGG-PI-612A1 )  
For: Rapid Solidification )  
Processing System for )  
Producing Molds, Dies )  
and Related Tooling )  
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)

11/20  
11/6/02

DECLARATION OF KEVIN M. McHUGH UNDER 37 CFR §1.132

Assistant Commissioner of Patents  
Washington, D.C. 20231

Sir:

I, Kevin M. McHugh, do hereby declare as follows:

1. I am the inventor of the invention claimed in the above-identified patent application.
2. I received a Bachelor of Science Degree, with a major in Chemistry, from the University of Maryland in 1981. I thereafter received a Ph.D. in Physical Chemistry from Johns Hopkins University in 1988.
3. I have been employed for the past twelve years at the Idaho National Engineering and Environmental Laboratory, most recently as an Senior Advisory Scientist, and prior to that time I was employed by Associated Western University for one and one half years as a Postdoctoral Fellow.

4. I have twelve years of experience in the field of spray forming and am skilled in the art.

5. I have reviewed the Bowen et al. and Alvarez et al. references cited by the Examiner in the above-referenced application.

6. One skilled in the art would not be motivated to combine Bowen et al. and Alvarez et al. as suggested by the Examiner, since Bowen et al. desires to maintain a low chamber pressure because "such low spray chamber gas partial pressure provides a higher temperature of the atomized spray in flight" (emphasis added) (see Abstract; column 1, lines 48-52, and column 2, lines 4-15), whereas the subject invention actually seeks the rapid in-flight cooling of the atomized droplets.

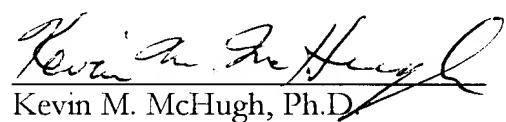
7. Assuming arguendo that the proposed modification of the Bowen et al. invention were proper, such modification of the Bowen et al. invention would actually render the system of Bowen et al. undesirably inoperable, since such a modification would not reduce deposit porosity, reduce grain layering or banding, or provide uniform grain structure through the thickness as desired by Bowen et al.

8. On page 4 of the Office Action, the Examiner cites Orme et al. as "disclos[ing] that a deficiency in spray forming is that the spray is for the most part uncontrolled . . . And thus the smaller droplets may arrive at the surface pre-solidified, and there would be little cohesion between the particle in the deposit". However, it should be appreciated by the Examiner that the relatively cold ambient gas of the present invention, provides a heat sink for the atomized droplets, producing droplet populations in undercooled, liquid, solid and semi-solid states". (See: specification page 12, lines 1-52). Therefore, since Orme et al. identifies what he considers to be a disadvantage of spray forming technologies, one skilled

in the art would not be motivated to combine the techniques used in Orme et al. with any spray forming technology.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made of information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 4/24/2002

  
Kevin M. McHugh, Ph.D.